

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1-18. (canceled)

19. (currently amended) An apparatus of producing a protein crystal, comprising:

a dialysis cell ~~having a container~~ for containing a protein crystal and a protein solution filled around the protein crystal, ~~and provided with a dialysis membrane~~ the dialysis cell comprising (i) a quartz thin plate for mounting the protein crystal, provided with a light reflecting thin film on a portion of a surface thereof, (ii) an inner vessel for containing the quartz thin plate therein, provided with a surface portion covered with a dialysis membrane and filled with the protein solution therein, and (iii) an outer vessel filled with the protein precipitating agent solution outside the dialysis membrane;

~~means~~ a protein solution inflow source selector for controlling a concentration of the protein in the protein solution around the protein crystal, the selector being capable of repeatedly switching between a protein solution and a diluent source for introduction into the dialysis cell;

~~means~~ a protein concentration measurement device for measuring a concentration of the protein solution around the protein crystal;

a two-beam interferometer for observing interference fringes around the protein crystal;

~~means~~ a precipitating agent inflow concentration control element for controlling a concentration of the precipitating agent in the protein solution around the protein crystal, the control element adjusting the concentration of the precipitating agent for introduction into the dialysis cell; and

~~means~~ a precipitating agent concentration measurement device for measuring the concentration of the precipitating agent in the dialysis cell.

20. (canceled)

21. (currently amended) The apparatus according to claim 19, wherein the ~~means for measuring the concentration of the protein solution~~ protein concentration measurement device is a spectrophotometer.

22. (currently amended) The apparatus according to claim 21, wherein the spectrophotometer measures an intensity of transmitted light that transmits a portion of the quartz thin

plate in the dialysis cell where light reflecting thin film is not provided.

23. (currently amended) The apparatus according to claim 21, ~~further comprising means~~ wherein the outer vessel comprises the precipitating agent inflow element for sending the precipitating agent solution having a desired concentration to the outer vessel of the dialysis cell.

24. (currently amended) The apparatus according to claim 21, further comprising ~~means~~ wherein the inner vessel comprises the protein solution inflow element for introducing the protein solution having a desired concentration into the inner vessel of the dialysis cell without disassembling the dialysis cell.

25. (currently amended) The apparatus according to claim 19, further comprising ~~means~~ a photography device for photographing the interference fringes by the two-beam interferometer, ~~such as a CCD camera.~~

26. (previously presented) The apparatus according to claim 19, wherein the two-beam interferometer is a Michelson type two-beam interferometer.

27. (canceled)

28. (new) An apparatus of producing a protein crystal, comprising:

an outer vessel having (i) a chamber and (ii) an inlet for introducing a precipitating agent into the chamber;

an inner vessel removably positioned within the chamber of the outer vessel, the inner vessel having (i) an interior for containing the protein crystal surrounded by a protein solution, (ii) an inlet for introducing the protein solution into the interior;

a dialysis membrane, the interior of the inner vessel and the chamber of the outer vessel being separated by the dialysis membrane;

a quartz thin plate for mounting the protein crystal, the plate having a light reflecting thin film on a portion thereof and being removably positioned in the interior of the inner vessel;

an inner vessel inlet source selector for switching between a protein solution and a diluent for introduction into the inner vessel inlet, the selector providing control of protein solution concentration in the inner vessel;

a protein concentration measurement device for measuring a concentration of the protein solution in the inner vessel;

a two-beam interferometer for observing interference fringes around the protein crystal in the inner vessel;

an outer vessel inlet concentration control element for adjusting a concentration of the precipitating agent for introduction into the outer vessel inlet; and

a precipitating agent concentration measurement device for measuring the concentration of the precipitating agent of the outer vessel.